

AST COLOR VISUAL DISPLAY

The AST Color Visual Display is now included as a standard feature on all new AST simulators, and offered as a retrofit for existing units.

Similar to its black and white predecessor, it automatically generates a visual scene of sky, horizon, ground and airport environment corresponding to the simulator's attitude, ground track and speed. The scene is derived from NAV PROM data for airport location and runway orientation.

In use, the instructor can preselect weather conditions and airport configuration prior to flight. As the simulator approaches an airport, actual runway layouts will appear for **up to three runways**, including parallels. The instructor can also preselect (or change) an active runway, putting the approach lights and markings on that runway while the others also remain in the picture, or can deselect runways to show only one or two. If two airports are within the field of view simultaneously, and the closer airport contains fewer than three runways, the other airport will also be displayed. Ground markings can also be added, displaying a grid of section lines (day) or lights (night) for ground reference during approach maneuvering or traffic patterns.

Weather control functions add a completely new training dimension, with the ability to fly VFR on top, between cloud layers, or in and out of cloud. The ragged ceiling selection affords experience in visually acquiring the runway, only to lose it again in the ragged cloud base, which may be selected to be above or below DH or MDA. The addition of visibility restriction (fog) creates an extremely realistic experience in reaching DH with only a portion of the ALS in view, then seeing the threshold lights, REIL, and finally landing with only a few runway lights and touchdown zone markings in sight.

In addition to the visual display capabilities, the system contains a built in I*T*S (Interactive Training System), providing a serial port (RS 232) for connecting the simulator to any IBM compatible microcomputer. Simulator position and performance data can be passed to the computer for recording, scoring, printing, voice response, or other applications. The color visual display system also includes a new Instructor Terminal with more control capability than previously provided on the Instructor Console.

This is the most valuable option we have ever offered, adding significant training value at a very reasonable cost. It has the look of airline simulation, the quality we demand for any AST product, and a price that permits economic as well as emotional justification. This visual display permits VFR flight, traffic pattern work, circling and sidestep maneuvers, and more. It will allow pilots to experience low visibility as well as low ceiling breakouts, various approach lighting systems, multiple cloud layers with ragged ceilings, and many other situations which they would otherwise never see in flight training. The features are all related to training objectives, but the appearance and professional image alone will attract and retain customers.

AST COLOR VISUAL DISPLAY SPECIFICATIONS

Colors: 16 colors simultaneously from a palette of 4096 choices.

Objects: Sky, horizon, ground, ground markings, runways, (one, two, or three simultaneously), runway centerline/lights, runway lights, touchdown zone markings, VASI, REIL, approach lighting systems (eight types), control tower with rotating beacon, terminal building, two cloud layers with selectable tops and bases, ragged ceiling thickness, restriction to visibility (fog).

Instructor Controls:

- Cloud layer two top (200 - 20,000 ft)
- Cloud layer two bottom (200 - 20,000 ft)
- Cloud layer one top (100 - 20,000 ft)
- Cloud layer one bottom (100 - 20,000 ft)
- Ragged ceiling depth (0 - 1,000 ft)
- Visibility (1,000 - 5,000 ft in 100 ft increments)
(5,000 - 30,000 ft in 1,000 ft increments)
(clear)
- Weather (above selections ON/OFF)
- Time of day (day, dusk, night)
- Runway lights (ON/OFF)
- Runway centerline (centerline/lights/off)
- VASI (ON/OFF)
- REIL (ON/OFF)
- ALS type (OFF, ALSF-1, ALSF-II, SALSF, SALS,
SSALR, MALSR, MALSF, MALS)
- Control tower (ON/OFF)
- Terminal building (ON/OFF)
- Number of runways * (1,2,3)
- Touchdown zone markings (ON/OFF)
- Ground markings (ON/OFF)

* The number and heading of the runways at any airport will come from the navigation PROM. The instructor may select 1, 2 or 3 simultaneously.

Technical Specification:

Field of view:	approximately 33° (instantaneous)
Optics:	Fresnel lense with object at infinity
Resolution:	400 vertical by 640 horizontal
Monitor:	25 inch RGB
Update rate:	approximately 15 Hz with average runway scene (tower, building, ALS, REIL, and weather conditions); 20-30 Hz with VFR enroute scene. Increasing scene content decreases update rate.